

AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough; and 2. added matter is shown by underlining.

1. (Currently Amended) An arrangement for the spatial display of a scene or object, comprising

an imaging device with a great number of ~~picture elements~~ (pixels  $[(\alpha_{ij})]$ ) in a raster of rows  $[(j)]$  and columns  $[(i)]$ , in which the pixels  $[(\alpha_{ij})]$  render bits of partial information from at least three views  ~~$(A_k)$  ( $k=1 \dots n, n \geq 3$ )~~ of the scene or object, and

~~one or several~~ an array  $[(s)]$  of a ~~great number of wavelength and/or gray level filters~~ filter elements arranged in rows  $[(q)]$  and columns  $[(p)]$  ~~and designed as filter elements~~  $(\beta_{pq})$ , part of which are transparent to light of specified wavelength ranges, ~~whereas~~ and the remaining part are opaque to light, the  $[(s)]$  array being arranged ~~(in viewing direction)~~ in front of  $[(\text{and}/)]$  or behind the imaging device with the pixels  $[(\alpha_{ij})]$ , so that propagation directions are given for the light emitted by the pixels  $[(\alpha_{ij})]$ , and in which each pixel  $[(\alpha_{ij})]$  corresponds with several filter elements  $[(\beta_{pq})]$  assigned to it, or each filter element  $[(\beta_{pq})]$  corresponds with several pixels  $[(\alpha_{ij})]$  assigned to it, in such a way that each straight line connecting the area center of a visible segment of the pixel  $[(\alpha_{ij})]$  and the area center of a visible segment of the filter element

$[(\beta_{pq})]$  corresponds to a propagation direction, and in which, within a viewing space in which ~~[[the]]~~ observer~~[[()]]~~ is ~~[( )]~~are~~[( )]~~ located, the propagation directions intersect ~~[[in]]~~ at a great number of intersection points, each of which represents an observer's position, so that ~~[[an]]~~ the observer at any of these positions will predominantly see bits of partial information from a first selection of views with ~~[[one]]~~ a first eye, and predominantly bits of partial information from a second selection of views  $(A_k) (k=1...n)$  with a second eye,

~~characterized in that~~ wherein

in at least a segment ~~of at least one~~ of the array~~[[s]]~~, the ratio between the areas covered by filter elements transparent to light of specified wavelength ranges  $[(\beta_{pq})]$  and the total area of all filter elements  $[(\beta_{pq})]$ , multiplied by the average number  $[(n')]$  of the different views displayed per row  $[(j)]$  of the raster of pixels  $[(\alpha_{ij})]$ , is greater than ~~[[1]]~~ one.

2. (Currently Amended) An arrangement as claimed in Claim 1, ~~characterized in that~~ wherein the filter elements  $[(\beta_{pq})]$  transmissive to light of specified wavelength ranges are ~~designed to be~~ transparent filters ~~essentially~~ transmissive to substantially the entire visible spectrum.

3. (Currently Amended) An arrangement as claimed in Claim 1 ~~[[or 2]]~~, ~~characterized in that~~ wherein the filter elements transmissive to light of specified wavelength ranges  $[(\beta_{pq})]$  are ~~[[so]]~~ dimensioned that ~~always~~ more than one pixel  $[(\alpha_{ij})]$  is visible per visible raster segment with reference to the pixel area.

4. (Currently Amended) An arrangement as claimed in Claim 1 [[or 2]], characterized in that the quotient of the sum of areas covered by filter elements  $[(\beta_{pq})]$  largely transmissive to light of ~~essentially~~ substantially the entire visible ~~spectral range~~ spectrum and the sum of the areas covered by all filter elements  $[(\beta_{pq})]$  of the respective array  $[(\alpha_{ij})]$  has a value lying between the quotient  $Q1 = 1.1/n'$  and the quotient  $Q2 = 1.8/n'$ , so that, because of the filter elements  $[(\beta_{pq})]$  transmitting light of the complete visible spectrum, always about 1,1 to 1,8 1.1 to 1.8 pixels  $[(\alpha_{ij})]$  on average are visible per visible raster segment with reference to the pixel area.

5. (Currently Amended) An arrangement as claimed in Claim 1 [[or 2]], ~~characterized in that~~ wherein, in case of parallel projection onto the raster of pixels  $[(\alpha_{ij})]$ , the segment corresponds to at least one row  $[(j)]$  or at least one column  $[(i)]$ .

6. (Currently Amended) An arrangement as claimed in Claim 1 [[or 2]], characterized in that, in case of parallel projection of a sufficiently large filter segment of at least one of the arrays of filter elements  $[(\beta_{pq})]$  provided onto at least one row  $[(j)]$  or onto at least one column  $[(i)]$  of the raster, not less than  $1.1/n'$  times but not more than  $1.8/n'$  times the area of the respective row  $[(j)]$  or column  $[(i)]$  is covered by filter elements  $[(\beta_{pq})]$  ~~essentially~~ transmissive to light of substantially the ~~complete~~ entire visible spectrum, so that, because of the filter elements  $[(\beta_{pq})]$  transmitting light of the ~~complete~~ entire visible spectrum, ~~always~~ about 1,1 to 1,8 pixels  $[(\alpha_{ij})]$  on average are visible per visible raster segment with reference to the pixel area.

7. (Currently Amended) An arrangement as claimed in Claim 1 ~~[[or 2]],~~  
~~characterized in that~~ further comprising at least one first continuous belt of transparent filters  
extending from one edge of the array to the opposite edge, and at least one second continuous  
belt of transparent filters extending from one edge of the array to the opposite edge ~~are provided,~~  
with ~~[[the]]~~ main directions of light propagation from ~~[[these two]]~~ at least first and second  
continuous belts ~~on the array~~ not being aligned in parallel with each other.

8. (Currently Amended) An arrangement as claimed in Claim 7, ~~characterized in~~  
~~that~~ wherein at least one of the continuous belts of transparent filters provided is aligned in  
parallel with the upper, lower, left or right edge of the respective array of ~~wavelength or gray~~  
~~level filter~~ ~~[[s]]~~ elements and/or parallel with the upper, lower, left or right edge of the raster of  
pixels ~~[[ $(\alpha_{ij})$ ]]~~.

9. (Currently Amended) An arrangement as claimed in Claim 7 ~~[[or 8]],~~  
~~characterized in that a great number of such~~ comprising a plurality of continuous belts of  
transparent filters ~~are provided.~~

10. (Currently Amended) An arrangement as claimed in ~~any of the claim~~ ~~[[s]]~~ 7  
~~through 9,~~ characterized in that at least some of the continuous belts of transparent filters are  
randomly distributed over array, ~~in so far as~~ while maintaining the ~~[[said]]~~ belts ~~[[are]]~~ arranged  
in parallel with each other.

11. (Currently Amended) An arrangement as claimed in ~~any of the claim~~[[s]] 7 through 9, ~~characterized in that~~ wherein at least some of the continuous belts of transparent filters are spaced at periodic distances on the array, ~~in so far as~~ while maintaining the [[said]] belts [[are]] arranged in parallel with each other, and ~~characterized in that~~ preferably wherein one of the continuous belts of transparent filters forms every m-th row (q) (with m>1) of the respective array ~~forms such a continuous belt of transparent filters.~~

12. (Currently Amended) An arrangement as claimed in any of the claim[[s]] 7 through 11, ~~wherein characterized in that~~, in case of parallel projection of any, but not necessarily each continuous belt of transparent filters onto the raster of pixels [[ $(\alpha_{ij})$ ]] in viewing direction, predominantly such pixels [[ $(\alpha_{ij})$ ]] are covered, at least in part, by such transparent filters that predominantly or exclusively render bits of partial information from one and the same view [[ $(A_k)$ ]].

13. (Currently Amended) An arrangement as claimed in ~~any of the claim~~[[s]] 7 through 11, ~~characterized in that~~ wherein, in case of parallel projection of ~~any, but not necessarily each~~ at least one of the continuous belt of transparent filters onto the raster of pixels  ~~$(\alpha_{ij})$  in viewing direction~~, several [[such]] pixels [[ $(\alpha_{ij})$ ]] are covered, at least in part, by [[such]] transparent filters that render bits of partial information of at least two different views [[ $(A_k)$ ]].

14. (Currently Amended) An arrangement as claimed in ~~any of the above~~ claim[[s]] 1, ~~characterized in that the~~ an assignment of bits of partial information from the views ( $A_k$ ) ( $k=1...n$ ) to pixels ( $\alpha_{ij}$ ) of the position ( $i,j$ ) is made according to the equation

$$k = i - c_{ij} \cdot j - n \cdot \text{IntegerPart} \left[ \frac{i - c_{ij} \cdot j - 1}{n} \right],$$

in which

(i) is the index of a pixel ( $\alpha_{ij}$ ) in a row of the raster,

(j) is the index of a pixel ( $\alpha_{ij}$ ) in a column of the raster,

(k) is the consecutive number of the view ( $A_k$ ) ( $k=1...n$ ) from which the partial information to be rendered on a particular pixel ( $\alpha_{ij}$ ) originates,

(n) is the total number of the views ( $A_k$ ) ( $k=1...n$ ) used at a time,

( $c_{ij}$ ) is a selectable coefficient matrix for the combination or mixture on the raster of the various bits of partial information originating from the views ( $A_k$ ) ( $k=1...n$ ), and

IntegerPart is a function for generating the largest integer that does not exceed the argument put in brackets.

15. (Currently Amended) An arrangement as claimed in ~~any of the above~~ claim[[s]] 1, ~~characterized in that~~ wherein, for the filter arrays provided, the filter elements ( $\beta_{pq}$ ) are combined into a mask image depending on their transmission wavelength, ~~[[/]]~~ their transmission wavelength range ~~[[/]]~~ or their transmittance ~~[[/]]~~  $[(\lambda_b)]$  according to the equation

$$b = p - d_{pq} \cdot q - n_m \cdot \text{IntegerPart} \left[ \frac{p - d_{pq} \cdot q - 1}{n_m} \right],$$

in which

(p) is the index of a filter element ( $\beta_{pq}$ ) in a row of the respective array,

(q) is the index of a filter element ( $\beta_{pq}$ ) in a column of the respective array,

(b) is an integer that defines one of the intended transmission wavelengths, transmission wavelength ranges or transmittances ( $\lambda_b$ ) for a wavelength or gray level filter ( $\beta_{pq}$ ) in the position (p,q), and that may adopt values between 1 and ( $b_{\max}$ ), with  $b_{\max}$  being a natural number greater than 1,

( $n_m$ ) is an integral value greater than zero that preferably equals the total number (k) of the views ( $A_k$ ) displayed in the combination image,

( $d_{pq}$ ) is a selectable mask coefficient matrix for varying the generation of a mask image, and

IntegerPart is a function for generating the largest integer that does not exceed the argument put in brackets.

16. (Currently Amended) An arrangement as claimed in ~~any of the above~~ claim[[s]] 1, ~~characterized in that~~ wherein exactly one array of filter elements ( $\beta_{pq}$ ) is provided and the distance (z) between the [[said]] array and the raster of pixels ( $\alpha_{ij}$ ), measured in a direction normal to the raster, is defined according to the equation

$$\frac{p_d}{s_p} = \frac{d_a \pm z}{z},$$

in which

( $s_p$ ) is the mean horizontal distance between two neighboring pixels ( $\alpha_{ij}$ ),

( $p_d$ ) is the mean interpupillary distance of an observer, and  
 $d_a$  is a selectable viewing distance.

17. (Currently Amended) An arrangement as claimed in ~~any of the above claim~~[[s]]  
~~1, characterized in that~~ wherein all filter elements provided on the filter array or filter arrays are  
of equal size.

18. (Currently Amended) An arrangement as claimed in ~~any of the above claim~~[[s]]  
~~1, characterized in that~~ wherein the filter elements provided on the filter array or filter arrays  
have an essentially periodic arrangement.

19. (Currently Amended) An arrangement as claimed in ~~any of the above claim~~[[s]]  
~~1, characterized in that~~ wherein the light propagation directions for the partial information  
rendered on the pixels  $[(\alpha_{ij})]$  are specified depending on ~~their wavelength/~~ their wavelength  
range.

20. (Currently Amended) An arrangement as claimed in ~~any of the above claim~~[[s]]  
~~1, characterized in that~~ wherein on at least one of the arrays of filter elements  $[(\beta_{pq})]$  provided,  
in at least one row (q) of the array, immediately neighboring transparent filters border on a  
different number of immediately neighboring transparent filters on row (q-1) than on row (q+1).



21. (Currently Amended) An arrangement as claimed in ~~any of the above claim[s]~~ 1, ~~characterized in that~~ wherein each of the filter arrays provided is ~~designed as~~ comprises a static, temporally invariable filter array and arranged ~~essentially~~ in a substantially fixed position relative to the raster of pixels  $(\alpha_{ij})$ , ~~i.e. the imaging device~~.

22. (Currently Amended) An arrangement as claimed in ~~any of the above claim[s]~~ 1, ~~characterized in that~~ wherein at least one pixel  $[(\alpha_{ij})]$  renders image information that is a mix of bits of partial information from at least two different views  $[(A_k)]$ .

23. (Currently Amended) An arrangement as claimed in ~~any of the above claim[s]~~ 1, ~~characterized in that~~ wherein the imaging device is ~~either~~ comprises an LC display, a plasma display, or an OLED screen.

24. (Currently Amended) An arrangement as claimed in ~~any of the above claim[s]~~ 1, ~~which is provided with~~ further comprising a translucent image display device ~~such as, for example, an LC display,~~ and exactly one array of filter elements  $[(\beta_{pq})]$ , which is arranged (~~in viewing direction~~) between the image display device and a planar illuminating device, and ~~which is further provided with~~ a switchable diffusing plate between the image display device and the filter array, so that in a first mode of operation, in which the switchable diffusing plate is switched to be transparent, a spatial impression is produced for the observer  $[(s)]$ , ~~whereas~~ and in a second mode of operation, in which the switchable diffusing plate is switched to be at least partially diffusing, the effect of the array of filter elements  $[(\beta_{pq})]$  is cancelled to the greatest

possible extent, so that the diffused light permits a homogeneous illumination of the image display device in the greatest possible degree, and that two-dimensional image contents can be displayed on the said image display device with undiminished resolution.

25. (Currently Amended) An arrangement as claimed in ~~any of the claim~~[[s]] 1 ~~through 23, which is provided with~~ wherein at least one array of filter elements ~~[[ $\beta_{pq}$ ]]~~ which contains pixels of an electrochromic or photochromic design that at least partially act as wavelength or gray level filters, the ~~[[said]]~~ array exhibiting, in a first mode of operation, a filter array structure that is suitable for 3D display, ~~especially by means of the pixels that are of electrochromic or photochromic design, whereas~~ and in a second mode of operation the pixels of electrochromic or photochromic design are switched to be as transparent as possible, ~~preferably to be essentially completely transparent~~ to the entire visible spectrum.

26. (Currently Amended) An arrangement as claimed in Claim 25, ~~characterized in that it is provided with~~ comprising the wavelength or gray level filters of electrochromic or photochromic design ~~as well as with~~ and wavelength or gray level filters of invariable transmission properties, the ~~[[said]]~~ wavelength or gray level filters of invariable transmission properties ~~preferably being essentially completely~~ substantially transparent to the entire visible spectrum.

AMENDMENTS TO THE DRAWINGS

Applicant has noted that drawings published in the international publication of the parent application contain some errors apparently introduced in the scanning process. The drawings include significant black areas which do not appear to have been properly recognized by the scanning process. Drawings identical to the drawings submitted with the PCT application are included with this Preliminary Amendment.

Proper depiction of the black areas in the drawings is important to understanding the filter arrays as discussed in the present application. Applicant respectfully requests that the Examiner ascertain that the drawings appear properly after the scanning process.